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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,785	01/04/2001	Clive Jones	537-1052	4133

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EXAMINER
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HOFFMAN, BRANDON S

ART UNIT	PAPER NUMBER
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2136

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/913,785

Applicant(s)

JONES ET AL.

Examiner

Brandon Hoffman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,5-10 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5-10 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claims 1, 5-10, and 19-22 are pending in this office action, claims 19-22 are newly added.
2. Applicant's arguments, filed March 23, 2005, have been fully considered but they are not persuasive.

### *Rejections*

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 103***

4. Claims 1, 5-10, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hustig et al. (U.S. Patent No. 4,672,605) in view of Rhoads (U.S. Patent No. 5,768,426).

Regarding claim 1, Hustig et al. teaches a data encoding device having

- A serial data input (fig. 4, ref. num 38);
- An encoded serial data output (fig. 1, ref. num 60 and 340);
- **A random number generator which generates a stream of random bits** (fig. 1, ref. num 102);

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- An encoding unit which combines each **bit input on the serial data input** with a plurality of additional encoding bits forming an encryption key, to derive an encoded output bit (fig. 1, ref. num 98, 102, and 336) and
- Wherein over time the encoded output bit stream comprises substantially white noise (fig. 1, ref. num 98/336 and "WHITENED DATA").

Hustig et al. does not teach a **transformation unit comprising means for storing a predetermined number of values of the random bit to derive a multiple bit random word; a permutation unit which generates an initial plurality of encoding bits from the multiple bit random word; and an updated encryption key comprising a plurality of updated encoded bits, wherein an initial bit input on the serial data input is encoded with an encryption key comprising the initial plurality of encoding bits output by the permutation unit and each subsequent input bits are encrypted using an updated key which is derived from previous values of the key and of the input bit.**

Rhoads teaches a **transformation unit comprising means for storing a predetermined number of values of the random bit to derive a multiple bit random word (fig. 6, ref. num 214); a permutation unit which generates an initial plurality of encoding bits from the multiple bit random word (fig. 7, ref. to "1<sup>ST</sup> THROUGH N<sup>th</sup> CODE WORDS"); and an updated encryption key comprising a plurality of updated encoded bits, wherein an initial bit input on the serial data input is encoded with**

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**an encryption key comprising the initial plurality of encoding bits output by the permutation unit and each subsequent input bits are encrypted using an updated key which is derived from previous values of the key and of the input bit (col. 17, line 1 through col. 18, line 29).**

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine each subsequent input bit is encrypted using an updated key which is derived from previous values of the key and of the input bit, as taught by Rhoads, with the device of Hustig et al. It would have been obvious for such modifications because this provides a digital output word, which can be used as a scaling factor. Also, the encoded data can be later verified in the case of piracy.

Regarding claim 5, the combination of Hustig et al. in view of Rhoads teaches wherein the serial input comprises a string of digital words each comprising a predetermined number of bits, and wherein the random number generator is clocked using a word clock, such that for each digital word of the input a new random bit is generated, and wherein the encoding unit is re-initialized by the output of the permutation unit once for each word (see col. 22, lines 11-50 of Rhoads).

Regarding claim 6, the combination of Hustig et al. in view of Rhoads teaches wherein the combination performed by the encoding unit is carried out more rapidly than the time associated with the reception of each input bit from the serial data input, such

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that the encoded output bit represents the input bit with zero delay (see col. 17, lines 20-23 of Rhoads).

Regarding claim 7, the combination of Hustig et al. in view of Rhoads teaches wherein the input comprises digital audio data (see col. 17, lines 9-13 of Rhoads).

Regarding claim 8, Hustig et al. teaches an apparatus for generating digital audio data comprising:

- A data encoding device having:
  - A serial data input (fig. 4, ref. num 38);
  - An encoded serial data output (fig. 1, ref. num 60 and 340);
  - **A random number generator which generates a stream of random bits** (fig. 1, ref. num 102); **and**
  - An encoding unit which combines each **bit input on the serial data input** with a plurality of additional encoding bits forming an encryption key, to derive an encoded output bit (fig. 1, ref. num 98, 102, and 336) and
- Wherein over time the encoded output bit stream comprises substantially white noise (fig. 1, ref. num 98/336 and "WHITENED DATA").

Hustig et al. does not teach a source of digital audio signals, **a transformation unit comprising means for storing a predetermined number of values of the random bit to derive a multiple bit random word; a permutation unit which**

**generates an initial plurality of encoding bits from the multiple bit random word; and an updated encryption key comprising a plurality of updated encoded bits, wherein an initial bit input on the serial data input is encoded with an encryption key comprising the initial plurality of encoding bits output by the permutation unit and each subsequent input bits are encrypted using an updated key which is derived from previous values of the key and of the input bit.**

Rhoads teaches a source of digital audio signals (col. 1, lines 17-21), a **transformation unit comprising means for storing a predetermined number of values of the random bit to derive a multiple bit random word (fig. 6, ref. num 214); a permutation unit which generates an initial plurality of encoding bits from the multiple bit random word (fig. 7, ref. to "1<sup>ST</sup> THROUGH N<sup>th</sup> CODE WORDS"); an updated encryption key comprising a plurality of updated encoded bits, wherein an initial bit input on the serial data input is encoded with an encryption key comprising the initial plurality of encoding bits output by the permutation unit and each subsequent input bits are encrypted using an updated key which is derived from previous values of the key and of the input bit (col. 17, line 1 through col. 18, line 29).**

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine a source of digital audio signals, wherein each subsequent input bit is encrypted using an updated key which is derived from previous

values of the key and of the input bit, as taught by Rhoads, with the apparatus of Hustig et al. It would have been obvious for such modifications because this provides a digital output word, which can be used as a scaling factor. Also, the encoded data can be later verified in the case of piracy.

Regarding claim 9, official notice is taken that wherein the output at the output port is in SPDIF or AES/EBU format. Applicant admits, on page 1, lines 20-24 of the instant application, that SPDIF and AES/EBU are the common output methods for audio. Rhoads teaches the data signal can be an audio signal. It would have been obvious to a skilled artisan to use the common output methods for outputting audio signals.

Regarding claim 10, the combination of Hustig et al. in view of Rhoads teaches comprising a compact disc player (see col. 18, lines 26-29 of Rhoads).

Regarding claim 19, the limitations of claim 1 teach an encoding device – the reverse process is required by the decoding device and is therefore taught in correspondence with claim 1.

Regarding claim 20, the third limitation of claim 1 teaches a random number generator. The reverse process is required by the decoding device and is therefore taught in correspondence with claim 1, limitation 3.



Regarding claim 21, the limitations of claim 8 teach generating digital audio signals – the reverse process is required by the reconstructing of digital audio signals and is therefore taught in correspondence with claim 8.

Regarding claim 22, because the encoding and decoding are mirror processes of one another, the limitations of the encoding device are taught with reference to claim 1, and the limitations of the decoding device are taught with reference to claim 19.

### ***Response to Arguments***

5. Applicant amends claims 1, 5, and 8.
6. Applicant argues that the transformation unit cited by Rhoads singly applies the bits at the adder/subtractor, as opposed to the instant application that uses a plurality of bits from the permutation unit and subsequent bits.

Examiner cited figure 7 as the permutation unit, not figure 6. Therefore, the claim that the transformation unit only applies a single bit to the adder/subtractor is erroneous. Rhoads teaches additional (subsequent) identification-coded versions of the input signal can be produced by reading the stored noise data and using it in conjunction with the second through N<sup>th</sup> code words to encode the signal (see col. 22, lines 10-35 of Rhoads)

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon Hoffman whose telephone number is 571-272-3863. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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